

white throat, irregular black patch on the middle of the fore neck, and whitish-buff underparts, boldly barred with black on the fore neck and breast. It appears to me equally certain that the Formosan example with which it is compared is *T. blanfordi*, which belongs to quite a different section of the genus. We read that the throat is greyish buff; the rest of the underparts reddish ochraceous, deeper and richer on the fore neck, breast, and flanks; the middle of the fore neck and breast almost unmarked, while the sides of the neck and breast are marked with black lunules. Moreover, the upper parts have the buff markings rounder and more drop-like, and the black markings are less pronounced. This description agrees perfectly with *T. blanfordi*, which is common in China, but has never been recorded from Formosa, though there seems to be no reason why it should not occur there.—W. R. O. G.]

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XLV.—Notes on some of the West-Indian Humming-birds.

By GEO. E. LODGE, F.Z.S.

THE following notes on the habits of a few species of Humming-birds, made during a visit last winter to some of the West-Indian Islands, will, I hope, not be altogether uninteresting. In these islands Humming-birds are very fairly plentiful, but in no great number of species, most of the islands having only three or four, with the exception of Tobago, which has six or seven, and Trinidad, which has a good many more. But at the last island I made no stay.

The chief thing that occurred to me while making these notes was the fact that drawings of Humming-birds in books of natural history are almost always untrue to nature, which probably arises from the fact that the birds have never been seen alive by the artists. The stuffed Humming-birds one sees in museums are even worse, being gross caricatures, both in shape and attitude, and even the magnificent Gould collection fails entirely in exhibiting the subjects in natural positions.

My stay at each of the islands visited was generally of

only two or three weeks' duration, with the exception of Jamaica, so that I had not much time to devote to Humming-birds alone, as I was collecting ornithological and entomological specimens generally, and also spent a considerable portion of my time in landscape-sketching. In the latter pursuit, however, I generally had with me either a gun or a butterfly-net; but as I was shooting and skinning entirely single-handed, the series of specimens that I brought back with me was not extensive.

The islands that I made any stay at were Jamaica, Dominica, Tobago, and Grenada, and I propose treating of the species of Humming-birds found in these islands in the order named.

Jamaica was the first island that I visited, and as I stayed some six weeks, I had ample opportunities of studying the habits of the three species found there. These are *Aithurus polytmus*, *Lampornis mango*, and *Mellisuga minima*, the two former being peculiar to Jamaica, while the third is reported to be only found besides in the adjacent island of San Domingo.

The favourite haunts of the beautiful *A. polytmus* are among the clumps of rose-apple trees, which usually grow some 20 feet in height, but when growing by the sides of rivers are considerably loftier, probably often 40 feet in height. I think I never failed to find some of these birds in such situations. In foliage this tree is very dark in colour (excepting the young outside shoots, which are of a lovely rose-pink and golden green), and it is not at all unlike a mango, but the leaves are longer and narrower, and at the time of year I was there (January and February) the trees were full of their beautiful spring-like blossoms, of a pale delicate yellow colour, a mass of long delicate stamens spraying out in all directions. These flowers are the delight of the Long-tailed Humming-bird, and here he may be watched at leisure all day long. His presence is often detected before he is seen by the sharp, high-pitched, whirring noise of his wings, as he dashes from one blossom to another, but when hovering for his food the humming noise produced by his wings is in

a much lower key and not very loud. The sharp whir of wings just mentioned is produced only by the male bird, his mate flying about silently, except when hovering; neither did I notice it with any other species that I came across.

During a walk through the celebrated Fern Gully, which is halfway between Moneague and Ocho Rios, on the north coast, the presence of *A. polytmus* was very apparent in certain places. I saw few specimens, indeed, except when a bird might fly over the road from one densely-clad forest hillside to the other, but I was continually hearing the unmistakable sharp whirring of their wings.

Both male and female seem to be very pugnacious; at any rate they are both very fond of chasing the opposite sex. The male bird, too, is unremitting in his attacks on any other small bird that happens to come and hunt on the same tree; and I have seen one dash off from a rose-apple tree and chase away a harmless little hen bird that was busily feeding among some flowers close to the ground, 20 yards away from the tree on which he had been sitting. But among their own sex they seem to be quite amicably disposed, several of them often being seen hunting for their minute prey among the blossoms of the same tree, without interfering at all one with another. Perhaps they may be more pugnaciously inclined towards their own sex in the breeding-season—if, indeed, there is a regular breeding-season for this species, which Gosse seems to doubt in the charming descriptions of this species in his 'Birds of Jamaica.'

I had no luck in finding any nests here, although I found the beginning of one on Feb. 2nd. I was sketching the positions of a hen *A. polytmus* and a *Lampornis mango* (Mango Humming-bird), which were on the same tree (a guava, I think), when I noticed the *A. polytmus* seemed very anxious and fidgety; she kept coming and perching on twigs very close to me, and then dashing off and trying to drive the Mango away. However, she presently came with some cottony stuff in her beak, which she placed on a horizontal twig underneath some large leaves. On investigation there was found to be quite a little platform-like lump of cotton,

which was evidently the beginning of a nest. But it was never finished. In a week's time the twig was found to be quite bare, without a vestige of cotton about it, much less a Long-tailed Humming-bird's nest: greatly to my disappointment, as I had fully expected to have found the nest finished, and had intended to have annexed it forthwith.

The note of this bird is rather loud—a clear piping cry, repeated at short intervals. The flight is very rapid: when extended for any great distance a very perceptible dipping is noticed; and from the pace the birds go the long tail-feathers (the second from the outside) stream nearly straight behind them. I think these were the tamest Humming-birds I met with. They will sit motionless on a twig and allow themselves to be scrutinized and sketched from a distance of only a few feet, now and then dashing off with a loud whir and inspecting one blossom after another—hovering in all sorts of positions, sometimes above the flower, with their head and bill pointing straight downwards; at other times seeming to be suspended by the bill directly underneath the flower; and again they will cling to a leaf or twig with their tiny feet, the better to reach their prey, while the wings are all the time vibrating as rapidly as ever; perhaps, after the inspection of a dozen or so of blossoms, returning to the very twig from which they started. When at rest they sit almost always in a very bunched-up position—back and breast feathers puffed out, wings drooping beneath the tail, the two long feathers of which are always crossed, except when blown about by the wind, the head drawn short in to the shoulders, and the beak pointing rather upwards towards the sky. When thus at rest they have a habit, in common with other species of Humming-birds, of incessantly and rapidly protruding the tongue. To see the full beauty of the male Long-tail the rays of light must be directly opposite to the almost flat surface of the feathers. Hold him by the beak with your back to the window in a nearly vertical position, but with his tail rather nearer to you than the head, and the breast is nothing but dull black; just slightly tilt him forward, so that his head is nearer than his tail, and his



whole breast, from beak to feet, suddenly blazes out into the most gloriously brilliant emerald-green that it is possible to imagine. It fairly startles one by its sudden intensity. This beautiful colour loses much of its brilliancy after death when exposed for long to the light. The specimens in the Gould collection in the British Museum at South Kensington have lost all the golden colour from the green, and are now much bluer in colour than when fresh. Also when the feathers are damp they change their colour for the time. I have noticed this in both *A. polytmus* and *Eulampis holosericeus*: the former when put away in a damp atmosphere for relaxing, and the latter when cleaning blood from the feathers with plaster of Paris and water. In both cases the colour becomes much more golden; but when dry again the original colour obtains.

To see the Long-tail in all his glory, follow one that has dashed away from a rose-apple tree to feed among some patches of low-growing lantana; here he will be below the level of your eye, instead of being pretty high up among the rose-apple blossoms. A silent approach and a cautious halt will not alarm him, and you can watch him at your leisure as he rapidly examines one orange-flower head after another, even coming almost within arm's-length of you, balancing himself with rapidly humming wings, for all the world like a big humming-bird hawk-moth, especially in the perfect command he has over his position, shifting only a fraction of an inch at a time as he probes his coral-red black-tipped beak further into the corolla of the flower; his bronzy-green back and jet-black head exciting your admiration, until it is eclipsed by the blazing emerald of his breast as he suddenly faces you at another flower-head, peering into the blossom with sparkling black eyes, all the time surrounded by a filmy grey halo of rapidly vibrating wings, while the two long streamers from his blue-black tail float behind him, gracefully waving at every motion of the bird. Suddenly he is gone—so quickly, indeed, that you hardly know in which direction this little emerald fairy phantom of an atom has sped his hungry way. But your eye reaches other patches of

lantana, and presently again discovers him hovering over and among the blossoms twenty yards away. Presently he stops feeding and sits on a little twig, his long tail-feathers almost reaching to the ground, a little round ball of beautiful feathers, the two ends of his long black crest just sticking out from the nape of the neck. Again, with a clear little piping cry, he shoots off on the war-path, as he sees a little white-breasted hen of the same species, also busily employed in filling her ever-hungry little stomach; and the pair dash off, whizzing and zigzagging in a mazy course through the bushes with most marvellous speed and dexterity, screaming in their mad chase, until they are quickly lost to sight—but not to mind.

Sometimes the Long-tails hunt insects on the wing, and splendid they look as they dash hither and thither in the air, frequently stopping in their rapid evolutions and hovering perfectly motionless for several seconds at a time, always in a very upright position, as if they were suspended by an invisible thread by the beak. Then, if you are sitting on a good high bridge over a river, with a dense fringe of sombre-coloured rose-apple trees on both banks 30 or 40 feet high, spangled with their lovely creamy blossoms, these overshadowed by tall, graceful, ever-bending bamboos, you have a beautiful background as a setting for the delicate little emerald bird shooting about in the air, glowing in the rays of the tropical sun. Presently a dusky bird, rather larger than the Long-tail, whizzes out from a bare twig where he has been sitting unobserved, and also takes to fly-catching in the air. He looks sober enough in colour until there is suddenly a purple flash underneath him, as he flirts out into a wide fan his broad tail-feathers, and this he incessantly does as he hovers about in the air. This is the so called Mango Humming-bird (*Lampornis mango*), and perhaps the company will be joined by one or two more, now darting about in the air and anon dashing off to rest on some twig or to pursue their explorations among the blossoms on the trees at the side of the river.

To see a sight like this it is worth braving all the terrors of the Atlantic.

It is beautiful to watch the sports of these fairy birds, and it seems absolutely barbarous that thousands upon thousands of Humming-birds should be slain for unscientific purposes. In the cause of science and art one has no compunction in killing specimens: the world at large benefits therefrom. I am glad to say that now all the West-Indian islands under the British rule have strict laws as to the preservation of birds—all the brightly-plumaged birds being absolutely protected all the year round, while other species are protected during their breeding-seasons. But for scientific purposes one can always obtain a special permit to shoot, and we had no difficulty in obtaining this permit from the various Governors of the islands we visited, with one exception, of which in its place.

I see that Gould says of the Mango Humming-bird that the specimens with steely blue-green throats are the female birds, but he does not say that this has been proved by dissection. Two females that I skinned and dissected have not a trace of any metallic colour on the throat, and not much of the purple glow down the sides of the neck, and a male bird was exactly the same in colour. One of these birds had a mass of minute black insects in its crop. I put this mass into water, and on examination through a strong magnifying-glass it appeared to be composed entirely of very small black ants, each having two pairs of longish wings. There were several dozens of them. That the birds do suck nectar out of flowers is true enough, but they find their staff of life in insects. One of my specimens, being hung up by the foot before skinning to keep it out of the way of ants, dropped some clear liquid from its beak. I tasted one of these drops as it hung from the end of its mandibles, and it was quite sweet: evidently flower-nectar.

This species has a very long neck, which is quite apparent when the bird is hovering for its food. When at rest it often sits as bunched-up as does the Long-tail, but not

always so. When beginning to get alarmed on its perch it will stretch out its neck and draw all its feathers close in to the body, showing its shape to perfection. On such occasions one can clearly see the remarkable depth of the breast, caused by the deep keel to the sternum. I suppose that the pectoral muscles of Humming-birds are larger, in proportion to the size of the bird, than those of any other bird in the world; and well may they have such mighty muscles, when one comes to consider the enormously powerful and sustained flight of the bird. When Humming-birds are hovering, too, this shape is very apparent.

The Mango bird seems to be rather more partial to open country than is the Long-tail, and may often be seen by the roadside in an open pasture-country with only a few scattered trees about. The curious bloom of the banana is a favourite hunting-place for them, and Banana Humming-bird would be a much more appropriate name than Mango Humming-bird, as I never once saw it on a mango-tree; in fact, I do not think I ever saw a Humming-bird of any kind on a mango-tree. This species is also very fond of the splendid hibiscus flowers. It does not seem to be nearly so plentiful as *A. polytmus*, which appears to be by far the most common of the three kinds found in Jamaica. A very noticeable feature in regard to the habitats of the different sexes of the latter bird is, that whereas the male bird is almost invariably found among dense thickets and deep gullies, especially where the rose-apple abounds, the female bird is promiscuously present in every kind of situation, as often by bleak roadsides, feeding among the convolvuli that grow over the boundary-walls and other flowering plants among the low herbage, as in the haunts of its handsome mate; and it is also very familiar among houses, coming every few minutes of the day to feed among the creepers that commonly grow over the verandas, being so fearless that a spectator a few feet off does not alarm it. As a rule, in rainy weather Humming-birds sit close among thick bushes, waiting patiently for the rain to stop. But on one occasion a female *A. polytmus* came to our veranda and



fed for some time on the flowers there, although it was raining pretty hard at the time and was getting dark. This was about 5.30 P.M.

The female *A. polytmus* rests in a more slim position than does her mate. Her note is exactly the same. I have no record of the note of the *Lampornis*; it seems to be a very silent bird. Its dark colour makes it appear a larger bird than it really is. Its tail is its chief beauty. This is composed of broad feathers, the two central ones being nearly black; the rest are a glowing reddish-purple colour, broadly barred towards the ends with greenish black; extreme tips greyish white. This fine tail is continually flirited widely open as the bird is feeding, and makes a beautiful purple fan. *L. mango* seems friendly towards its own and other species, and at times several will feed amicably together, but as a rule not more than one is seen at a time. *A. polytmus*, on the contrary, frequently appears to live in little colonies, perhaps a dozen or so frequenting a patch of rose-apple trees. This, however, refers only to the male bird.

The tiny *Mellisuga minima* was far less generally distributed than the other two species. It was fairly common at Constant Spring (six miles out of Kingston), and there were one or two in the hotel grounds at Spanish Town; but besides these I saw only two others at Montpelier, and none at all elsewhere. At Constant Spring they were mostly to be found by the roadsides and on the waste pieces of land that were thickly grown with ageratum, which plant they seemed to be very fond of, and which grew in profusion about 3 or 4 feet in height. Here, among butterflies, bees, and banana "quits," they hunted for their prey, and I vainly endeavoured to shoot them with sand; it had no effect upon them at all. I also as vainly tried to catch them in my butterfly-net; they would always keep just out of reach. When resting on a twig, I could sometimes get a butterfly-net within 2 feet of them, and then they would just shoot off like big bees and begin merrily feeding away among the ageratum again. *A. polytmus* can be caught in a butterfly-net with patience. I captured a couple of splendid

males thus one afternoon. I hung a bunch of rose-apple blossoms in the entrance of my net by string, then stalked the Humming-birds and held the net up as near to them as I could reach. One would come down now and then and hover a yard off in front, and then perhaps dash round and hover again close up to the back of the net, and then whirl off up to the top of the tree again. The two I caught came down fearlessly and hovered close up to the blossoms, when a rapid swoop of the net made them prisoners.

The Jamaicans call the *Mellisuga minima* the "Bee Humming-bird," which is an appropriate name for it, as its habits are very like those of a bee, and there is not such a very great difference between the sizes of the two creatures, this little bird being only  $2\frac{3}{4}$  inches from tip of beak to end of tail. The negroes in Jamaica call all Humming-birds "Doctor-birds," as they do also in Barbados and Dominica. A boy told me that doctors used the dried bodies for ingredients in some kind of medicine. Of course this is a fairy tale. But I think it is mentioned in a book called 'Obeah in the West Indies,' by J. Hesketh Bell, that the Obi men (sorcerers) use the bodies of Humming-birds as charms in certain cases, I think to protect banana and yam patches from thieves, the blacks always being highly superstitious. This would doubtless account for the name.

The Bee Humming-bird makes an exceedingly loud buzzing. On one occasion I looked among the grass at my feet for what I thought was a big bee or beetle buzzing on the ground, and presently discovered that it was one of these tiny birds slowly droning away among the twigs of a log-wood tree a few yards off. It was not feeding, but slowly buzzing about and settling on twigs and then flying off again, as if not satisfied with its perch. When flying away it looks exactly like a big bee, holding a straight course and flying at a fair pace. It looks very thick-set when at rest. This is chiefly owing to its very short tail. It droops its wings under its tail, which was the constant habit of all the Humming-birds I observed. I have watched it on a plumbago-tree while resting after feeding among the pretty blue

blossoms, singing its little song with great glee. Not much of a song certainly : about three little squeaky, feeble notes, repeated over and over again.

I did not obtain a single specimen of this species. While at Constant Spring I was mostly butterfly-hunting, and the few shots I had at these birds were with sand, which proved futile. I quite expected when leaving this district to find them common everywhere else, but never got another chance of shooting them. The colour of this bird is quite plain : dull green above and dull white below, without any of the splendid metallic colours so generally characteristic of this interesting and beautiful order of birds.

After leaving Jamaica we went to Dominica, stopping a week end at Barbados to change steamers. I saw two species of Humming-birds in Barbados, viz. *Eulampis holosericeus* and one of the little crested species : either *Bellona cristata* or *B. exilis* ; I do not know which, as, the birds being always above me, I was unable to see the colour of their crests. There were several of these feeding among the blossoms that grew on a tree close to the Marine Hotel. I do not know the tree, but in general appearance it was not unlike an acacia and had white (or cream-coloured) blossoms, which smelt very sweet. On this tree were always other small birds feeding, and the Humming-birds took no notice of them and in no way disturbed them, so far as I could see. One *E. holosericeus* here was feeding among the grasses, evidently picking up insects from the heads that had gone to seed.

Dominica has four species of Humming-birds—*Eulampis holosericeus*, *E. jugularis*, *Bellona exilis*, and *Thalurania wagleri*. Here the little *B. exilis* is exceedingly common—much the most plentiful of the lot, while the *Thalurania* is the least common, or, at any rate, very much more local in its distribution, as it is found only up in the high mountains. I do not think I saw it at a less elevation than 1000 feet ; but this altitude is guess-work on my part, as I had no means of finding the height above sea-level. At any rate this bird is found up in regions where one is among the

clouds, and is always liable to get a drenching with rain, although down below it may be brilliantly fine all day, these mountain-peaks almost always having clouds hanging about them.

As soon as one begins to hear the beautiful clear bell-like notes of the *Myiadestes dominicanus* ("Siffleur montagne," in native patois), which are so characteristic of the gloomy damp forests up in these regions, then one begins to look out for the pretty little Wagler's Wood-nymph, which does not appear to be a very common bird, or, if common, is not often seen, owing to its retiring habits. I made two visits for it, but saw few specimens, and only succeeded in shooting three, one of which was too hopelessly smashed up to be of any use as a specimen. These birds are very tame and allow a close approach. They seem to be very sedentary in their habits. I only saw two feeding, all the others being discovered sitting motionless on twigs. From this fact, probably, they appear to be less common than they really are, as it is not easy to discover so small an object among the huge tangle of tropical vegetation unless it betrays itself by movement. These birds sit usually in a bunched-up position and appear very blue in colour, especially when one has been looking at the green *E. holosericeus*.

In hunting Humming-birds in these situations one has to take into consideration before shooting them the possibility of retrieving them when shot, as, although a bird may be perched only a few feet off the mountain-path, yet it may be in such a position that when shot it would fall down the mountain-side, which is often very sheer, and be hopelessly lost among the dense vegetation growing down the sides. So I always observed the habit of taking stock of where the bird would fall before shooting him. The first one of this species that I came across was in such a situation that I could not shoot at it. It was sitting on a twig just off the path and a little below me, with a dense tangle of vegetation growing all down the mountain-side underneath him. So I watched him from a distance of only a few feet and made a sketch of him. He was uttering a feeble little song, with no



sweetness in it, only a series of weak little squeaky notes which would not have been heard many yards off, but still a continuous song. I presently threw some stones gently at it, in hopes of it shifting its position to a more favourable one for shooting at. But he still kept to the same side of the path and began feeding among the flowering shrubs down the mountain-side, and so I lost him. I saw two or three more that day and shot one, but it was smashed beyond repair. My next expedition to the same locality found one of this species—perhaps the same bird—in exactly the same place where I saw the first one, and this time, observing there were some large broad leaves immediately underneath him, from which I could retrieve him without any risk to my neck, I shot him. He fell on to one of these leaves, but before I could get at him had recovered and went whizzing down the mountain-side, and so was lost. After a long hunt in the gloomy forest among dense vegetation, tree-ferns, creepers, rotten logs, stones, swamps, &c., I had similar bad luck with another one, only wounding him, and being unable to follow his course through the dense growth. After that, on my way back, I had better luck and killed a couple of good specimens, not a bit spoilt by the shot. I spied the first sitting on a twig of a flowering tree with white blossoms, luckily on the upper side of the path; so, leaving my pony in charge of the negro boy, I crawled up the bank until I was within shot of him. He frequently came back to the same twig after feeding among the blossoms, this twig being so close to me that I could not shoot without blowing him all to pieces. At last I got a shot as he was feeding, but missed him. However, he did not seem to take that amiss, but went on feeding (his humming is not very loud), and presently came back to rest on his favourite perch. I was a little further away by this time and shot him quite clean. The other I shot was perched on a twig over the pathway in a dark gloomy corner. This was also on a tree with white blossoms.

I never heard the note of this bird, except the little song before mentioned.

These two specimens are almost exactly alike in plumage, one of them being only a trifle brighter in colour. On dissection they proved undoubtedly male and female, the male being the brighter coloured one. The sizes were: ♂  $4\frac{1}{4}$  inches in length,  $6\frac{1}{2}$  in breadth; ♀  $4\frac{1}{4}$  in length, 6 in breadth. This surprised me much, as I had a pamphlet by G. E. and A. H. Verrill, 'Notes on the Fauna of the Island of Dominica' [from 'Transactions' of the Conn. Academy, vol. viii. p. 315, April, 1892], kindly given me by Mr. A. Frampton, a resident in Dominica, in which the authors state, when treating of this species, "Sexes very different in plumage." They further state that they only met with one female, which they obtained, and that the males were observed about the nests and *sitting on the eggs*. I had a conversation on this subject with Dr. Nicholls while in Dominica, and he was of opinion that the two sexes of this species are similar in colour, and that Verrill had made some mistake about this. Since my return to England I have further pursued this matter, but find that Gould and Elliot both describe the female as being quite different from the male. Gould also figures a white-breasted female in his grand monograph. I have also examined the series of skins in the British Museum, and among several of the wholly green and blue birds there is a white-breasted one, labelled a female, but the locality is not noted on the label. Both my birds are entirely green and blue. One of the Gould cases in the British Museum appears to me to be wrongly labelled. The birds seem to me to be of this species, but are named *Eucephala grayi*, which is coloured almost exactly like *Thalurania wagleri*, but the green is of a rather yellower tone, and the bird has a red beak, whereas the beak of *T. wagleri* is black, with the lower mandible flesh-coloured for about three-fourths its length from the base.

In its geographical distribution this bird is remarkable. It is described as being found in the north of Brazil, and Gould says it may possibly be found in Guiana, which is nearly on the Equator. Then it is found nowhere else except in this island of Dominica, which is about  $15^{\circ}$  N. lat. This is very remarkable when we come to consider the numerous islands

between these two localities. How has this isolation come about?\*

The beautiful *Eulampis jugularis* is very common in Dominica, and it seems to have an extensive range of country, being found in equal abundance up in the haunts of *T. wagleri* and in the low country right down to the coast. Up in the mountains it will be found frequently sunning itself by the pathway-sides or feeding among banana patches, or among the blossoms of a tree that grows to a good size and has large bell-shaped yellow flowers. Along the coast, wherever there are colonies of native huts it will be found again, feeding among bananas, oleander, and hibiscus. Bananas are favourite hunting-grounds, and where a patch is of any great size one may come across several of the birds. I never saw them in close proximity, except on one occasion, when there seemed to be two or three hunting one patch of rather small dimensions; but it is impossible to tell whether one sees the same bird over again or different specimens, unless they are on view at the same time.

They are quite tame, and being of a fair size are easily discovered, even when at rest, especially as they are fond of sunning their lovely plumage on a conspicuous dead twig by the sides of the paths, and often will not trouble to fly away though one passes within a few feet of them. Almost all the Humming-birds I met with seemed to prefer perching in conspicuous positions, choosing a bare twig outside a bush rather than in the bush itself among the foliage. The male looks splendid as he sits on a bare twig, basking in the rays of the hot sun, by some steaming forest pathway, his tail widely spread and the sun flashing from his crimson-purple throat and breast and from his golden-green wings and curious steely-blue upper and under tail-coverts, the whole set off by the velvety blackness of the rest of his plumage; and a peculiarity is that the metallic colour on his wings extends to the primary feathers. There is considerable variety in the brightness of colour of the plumage, some males being much more gorgeous than others.

\* [The old localities are wrong. The species is peculiar to Dominica. Cf. Salvin, Cat. B. xvi. p. 87.—EDD.]

The female is similar in colour, but not so bright, neither is the black part of her plumage so deep and glossy. The steely blue, with a faint tinge of green, of the tail-coverts is quite a peculiar colour, and Gould has missed it in his plate of this species; he has made it much too green. I never saw this bird over water. It seemed to like any sort of locality so long as there were plenty of bananas about. I set up some of these birds at the time (as well as other Humming-birds I obtained) as nearly as I could in the positions I saw them in when alive, mounting them on the Waterton principle, without wires. In skinning Humming-birds one is much struck by the great toughness of the skin, which is a great help, and compensates for the difficulty of manipulation of such small subjects. The muscles on their little carcasses, too, are as hard as wood. Luckily their heads are small, and there is no difficulty in skinning them back to the beak to get at the skull to clean it. The tongue is, to a great extent, on the Woodpecker principle, but is cleft towards the tip, each bifurcation being clothed with minute bristles on the outside edge. The sternum is prolonged back so far that it reaches almost to the end of the vertebræ, covering all the abdominal part of the system. Humerus, radius and ulna are very short.

*Eulampis holosericeus* was also common in Dominica, but rather less so than *E. jugularis*; but I found this to be a shier bird; it very soon got frightened at being disturbed, when it was useless attempting to get close enough to shoot it (my shooting-range usually being from 10 to 20 feet). Its very position when at rest denotes its shy nature. Instead of sitting quietly with its head drawn back into its shoulders, it seemed always to be on the alert, with feathers close to its body and neck stretched out, looking about in all directions and ready to dash away on the too close approach of the spectator. It often feeds among herbage close to the ground, which I never saw *E. jugularis* do, and seemed especially fond of a plant that grew about 18 inches in height, with globular honeycombed seed-heads, not very unlike our horehound. This plant was always infested with small insects. I found *E. holosericeus* at a good elevation, but not



so high up the mountains as I found *E. jugularis*, and it seems to be more partial to the low country.

The plumage of the two sexes is similar, but that of the male is brighter and richer than that of his mate. Although these birds are more shy than the others, they seem to be fairly tame when not disturbed, and might frequently be seen feeding among the flowering trees in the town (Roseau) and coming to the bananas by the natives' huts; but they are more easily alarmed and do not allow so close an approach. Banana patches are always a favourite hunting-ground of this species.

I see that Gould makes two species of this bird, one of which he calls *Eulampis holosericeus*, as named above, and the other *E. chlorolema*. After looking through a large series of skins in the British Museum there seems to be little cause for such discrimination, as the blue band across the breast, on which Gould chiefly bases his distinction, varies in individuals from a mere spot to a band right across the breast, and it seems impossible to draw a line of demarcation between the two supposed species.

*Bellona exilis* is very common in Dominica, and may be seen almost everywhere except up in the high mountains, for I saw very few up in the districts haunted by *Thalurania wagleri*. The male of *B. exilis* seems to feed promiscuously upon any plant, bush, or tree that has flowers. His glittering golden-green crest seems always to be erect; I do not think that I ever saw it laid back; but he probably lays it flat when flying from one place to another. In profile he while sitting still shows his crest-feathers to be absolutely vertically erect, and they appear thus like two or three lines springing up from the head, though of course from a front view the crest appears like a broad flat mass of feathers tapering away to a sharp point. His figure while at rest is generally rather slim, his tail slightly raised from the slope of his back, and his beak nearly horizontal. Telephone-wires are a very favourite perch of his, failing which any bare exposed twig will suit him. He is quite a soberly clad little bird, except for his crest, which glitters like an emerald star as he hovers

round the flowers seeking his food. The humming of this bird is not so loud as that of the Jamaica *Mellisuga minima*, but he can fly faster. Wherever there are flowers, there this little bird will be found, from the white cedars growing from the shingle on the beach to the densest tangle of forest up in the mountains. I do not think I ever saw one feeding among the banana-blooms, but every other flower it seemed fond of. If there is a choice, I should say it was for the blossoms of the lime-trees (which here grow in great quantities and smell very sweet), lantana, allamanda, and a little kind of pea, with yellow flowers, which the negroes grow. There were also a few trees, not unlike acacias, with white blossoms, of which these birds were very fond, and I have seen six or eight of them on one small tree of this sort, all busy hunting, ever and anon chasing each other with shrill chirps, generally more males than females. They are inquisitive, and will sometimes come and hover a few inches from the muzzle of a gun that is pointed at them.

Three nests were brought to us, but whether they were owned by this species or by *E. holosericeus* I do not know. There were no eggs in them. They were very neat, and looked like tiny Goldfinches' nests, made principally of white cotton down, with little bits of lichen, moss, and fine grass-fibres, the foundation made of coarser bits of dead grass, and were all placed at the end of a drooping twig, just where the terminal leaves shoot out, these fringing out just below the nest.

I had many a hunt for the nests in places that were swarming with the males of *Bellona exilis*, thinking that the females were probably sitting on their eggs hard by, but I never succeeded in finding any. I found the beginning of a nest once, placed on a rank weed growing from the bank of a mountain pathway, I should think at an elevation of over 1000 feet. I saw the male bird fly there, and on lifting up a fern-leaf, which was hanging just over the place, discovered this beginning of the nest. I visited it twelve days afterwards, but, although there was more done to it, it had evidently been deserted.

This species is rather quarrelsome, the males chasing each other about continually, flying at a marvellously rapid pace, screaming shrilly the while.

The female bird differs considerably from the male in having no crest, a whitish-grey breast instead of dark blackish grey, and the green on her upper plumage is rather more inclined to a golden hue.

Being so small, it was found difficult to shoot them without spoiling them as specimens. I mostly used a 28-bore gun, which, although really too large for being quite successful as a Humming-bird gun, yet was a very useful all-round weapon, as I was ready with it for birds of all sizes, and on more than one occasion have returned from a hunt with a Buzzard and one or two Humming-birds. For the small quarry I cut down the cartridges to about an inch in length, putting in a very small pinch of powder and a tiny charge of very fine dust-shot, one thick felt wad between the two, and a thin cardboard wad over the shot. Even with a small charge like this it was very uncertain work, sometimes blowing the Humming-bird all to pieces, and at other times, at just as close or closer ranges, apparently missing it; so I was never sure whether I was going to secure a decent specimen or not. Of course the reason was that such a small charge in a comparatively wide bore made a very uncertain pattern, the bulk of the shot sometimes being on the object and at others being all round it. A .410 gun or a saloon pistol with dust-shot cartridges would have been a better weapon. For part of my time in Dominica a gentleman there, Mr. A. Fraughton, kindly lent me a .410 gun. I cut the cartridges down very small, and found that it shot Humming-birds very clean as a rule, and I obtained some first-rate specimens with it. The Humming-birds that came under my observation apparently did not begin to feed until the sun was well up, and then as soon as a hillside is thrown into shadow by the sun sinking behind it no more of these birds will be seen, while on gloomy dull days they will not be seen in such profusion as on a bright sunny day. Like butterflies, they seem to be about mostly in the hot rays of the sun.

My excursions in Dominica were limited, extending only to daily rides and walks from the town of Roseau. Having spent three weeks here, we left for Tobago, passing Martinique, St. Lucia, Barbados, St. Vincent, Grenada, and Trinidad, stopping a few hours at each place to take in and discharge passengers and cargo, and at Barbados staying two days. Arrived at Tobago, we met with a great disappointment at the outset. Sir Napier Broome, the Governor of Trinidad, under whose jurisdiction is also Tobago, refused our application to shoot birds. This was most unreasonable, as the permission might have stipulated a limited number of specimens of each species, as was the case in Jamaica; and our stay being a short one, about three weeks, I could not possibly have made much of a raid, as I was shooting and skinning single-handed. According to the Hon. James Kirk's list of birds of Tobago, there are seven species here (none of which I was destined to shoot), all different from those I had previously met with. However, although I could not shoot I could observe, and while spending all my time here in landscape-painting, I nevertheless kept my eyes on the look-out for Humming-birds that might come across my path. As might have been imagined, from not especially hunting for them, my notes are here very meagre.

In Kirk's list of the birds of this island the following seven species of Humming-birds are put down, all of them under the generic name of *Trochilus*:—*T. hirsutus*, *T. latipennis*, *T. mellivorus*, *T. viridis*, *T. moschitus*, *T. audeberti*, and *T. mango*.

Of these I saw only two species alive, viz., *Glaucis hirsuta* and *Chrysolampis moschitus*: one or two of the former, but the latter were fairly plentiful, especially females, and I believe the Emerald Humming-bird is not uncommon. A black boy brought me a young bird he had shot with a catapult, which I believe to be of this species. The throat and lower neck-feathers are emerald-green, but are not fully grown; body-feathers and under tail-coverts grey, those on upper breast tipped with bronze-green; lower abdomen white; head and upper part of back dull golden green,



shading into reddish brown on lower back and upper tail-coverts (these feathers being greyish black, but broadly tipped with reddish brown); primaries and tail bluish black. We purchased seven or eight skins here, among which were an Emerald and two *G. hirsuta*, the rest being *C. moschitus*. One hen bird of this last species used to come every few minutes during the day close to our veranda to feed among the blossoms of a curious plant, with thick fleshy leaves and a cluster of scarlet shoe-shaped flowers growing from the apex of the plant. This little bird always hovered with its legs hanging down. On examining the flowers I found them to be always swarming with small ants. We had several nests brought to us while here, all containing eggs, mostly with the full complement (two). But it was some time before we could make the stupid boys understand that we wanted to see the nests "*in situ*," and we saw only two thus, one of which I found myself. One of these was a nest of the *C. moschitus*, and was in a rather peculiar situation. A patch of young guavas of several acres in extent on a slight hillside had recently been burnt, so that there were only scattered brown sticks left, with a few shrivelled leaves hanging on to them, these sticks being only about 3 feet high. On the top of one of these sticks, exactly the height of my riding-whip from the ground, the Humming-bird had chosen to build its nest, which, being made of white material, was very conspicuous for some distance away among such bleak and brown surroundings. The nest was supported by a twig that grew away at an angle from the main stick, and contained two eggs. The bird at first was very shy, and for some time would not go near the nest, but sat about in the neighbourhood preening her feathers, sometimes spreading her tail wide open and stooping her head and neck forward with all her feathers bristled out, as if enjoying the hot rays of the sun. So we stretched ourselves flat on the ground, about 15 yards off, and waited patiently. At last she went to the nest, and by the aid of my field-glasses I made sketches of her position on the nest. She sat with her wings high above her tail, her neck and head high up, and beak almost horizontal.

Afterwards I made a careful sketch of the nest and eggs "in situ." While so engaged the hen bird came and hovered once anxiously within a few inches of my head. Another hen bird also came to look on, and the two chased each other about for a time. I saw nothing of the cock bird. A few days afterwards, while riding in the same direction, we expressed a wish to visit the nest again to see whether the eggs were hatched, but were told that it had been destroyed. The negroes take every Humming-bird's nest they can find and sell them to visitors coming past the island on the steamers; but this wholesale destruction by the residents appears to be passed over unnoticed, although it is quite a different case when an occasional visitor comes to kill a few birds in the cause of science. While here I saw a wretched darkie boy swaggering about with a muzzle-loading gun, who asked me whether I wanted any Humming-birds. I told him "No," and had half a mind to lay an information against him.

The Humming-birds' nests we had brought to us appeared to be of three different sorts, and the boy who brought them professed to be very positive as to their identity. He told us that the smallest one on horizontal twigs belonged to the Ruby-crest, the rather larger ones on more upright twigs to the Emerald, and the large, untidy, pouch-shaped ones hanging to the end of a shred of banana-leaf to the Doctor Humming-bird, which is the name they give here to the *Glaucis hirsuta*. Most of the nests of the two first-mentioned kinds are placed on small bamboo-twigs and are very beautiful. The smallest of them measures only  $1\frac{1}{4}$  inch in diameter, by  $\frac{3}{4}$  of an inch in depth, outside measurements. It is placed on a horizontal bamboo-twig, at one of the joints where two other twigs sprout out at one side, helping to support it. It is not easy to tell what it is made of, but it appears to be chiefly composed of seed-husks of grass, neatly clotted together into a compact mass by cobwebs, which also bind firmly round the main stem and the side twigs, while the outside is studded with little chips of very fine, sealy, bark-like material. This nest contained one egg, very large in proportion to the size

of the nest. Another beautiful one is made mostly of cotton, cobwebs, and small pieces of silver-grey lichen. Another has a good deal of moss in its composition, and one that is composed almost exactly of the same material as the very small one just mentioned, but is a larger nest, is merely saddled on to a horizontal twig, without any side support at all. One of those attributed to *Glaucis hirsuta* is 6 inches long outside. The nest inside rises higher at the back where it joins on to the leaf, measuring  $2\frac{1}{4}$  inches in depth here, while in front it measures only  $1\frac{1}{4}$  inch in depth. It is not a very compact structure, the egg being almost visible through the sides. It is made of fine fibres, felted together outside by spiders' webs, with a small leaf here and there. It ends in an untidy tail, mixed with little bits of stick, dead leaves, &c. There is no lining inside, and the leaf to which it is attached is plainly discernible through the fibres of which the nest is made.

The one I discovered myself had no eggs in it, and was composed of dry moss, grass-seed husks, and cobwebs, the outside being a mass of shreds of the dried peel of bamboo-twigs. There was another nest not many yards away on another bamboo, but rather higher up, about 20 feet or so. This was unfinished, and we left it. In this clump of bamboos, too, were several nests of the little "Sugar-eater," which I think is *Cæreba cyanea*. I saw no Humming-birds near this clump, so do not know to which species the nest I found belongs.

Passing from Tobago, we made our last stay at Grenada. Here the Governor, Sir Charles Bruce, was most kind to us in every respect, and readily gave us a permit to collect birds. There are but three species of Humming-birds in Grenada—*Glaucis hirsuta*, *Eulampis holosericeus*, and *Bellona cristata*. This latter bird is very much like *B. exilis*, except that his crest, instead of being golden green entirely, has the upper half of it of a rich purplish blue, and the colour of his upper plumage is of a bluer shade than in *B. exilis*. I do not think that the hen birds of these two species are to be distinguished one from another.

GoULD makes out a further species of *Bellona*, which he calls *B. ornata*, and which he distinguishes from *B. cristata* by the tip alone of the crest being blue. I have examined a large series of skins of both of these in the British Museum, and many birds were undoubtedly to be so distinguished; moreover, the blue on the crest of *B. cristata*, as a rule, appeared to be of a more purple hue than in *B. ornata*. But there were specimens the species of which it would be difficult to determine. In those skins that I examined there is a certain amount of variation in the colour of the central rectrices. In those labelled *B. cristata* these feathers are all of a purplish hue, but one or two specimens have greenish edges to these feathers. Those labelled *B. ornata* have in some specimens these feathers purplish, and in others a greenish hue entirely, like that of *B. exilis*. On the whole I am inclined to think that there is not enough ground to make these into two species, but that some specimens of the same species are rather richer in colour than others, just as we see in other Humming-birds—*Eulampis jugularis*, for instance—some specimens being much brighter-coloured than others. In Grenada *Bellona cristata* is exceedingly common and may be seen everywhere, especially on the telephone-wires. Its habits are exactly similar to those of *B. exilis*. It has a double note when chasing other Humming-birds—a quickly repeated shrill note, rather resembling the syllables “witt-tu, witt-tu.”

*Glaucis hirsuta* appeared to be far from common in the neighbourhood of St. George's, where we were quartered. I saw it only up at the Grand Etang; and after spending a day here in search of it, I only succeeded in obtaining one specimen. I saw several others, but they were invariably flying across the road at a tremendous pace and disappearing into the forest, which here is composed of immense trees, very dense and thick. This must be over 1000 feet elevation. I tried to pursue my hunting inside the forest for a little time, but was glad enough to get out again, as it was full of a very savage kind of tall grass, which grew 6 feet high, had saw-edges, and cut like a knife, also clinging to one's clothes



and making progress difficult. As these birds fly they utter a high-pitched note like "teep, teep." The bird I shot was settled on a broad grass-blade just off the side of the road. It was in the company of another, and I waited there for some time in hopes of obtaining this one also, but I did not get a chance. I saw it several times flash across the road, uttering its "teep, teep"; but I do not profess to be able to shoot rocketing Humming-birds. Once it settled on the telephone-wire, but would not allow a close enough approach for my small charge.

I saw a few *Eulampis holosericeus*, but having already obtained this species in Dominica, I did not molest them further than to shoot one specimen to make sure of its identity. This one was too much smashed to be of any use as a specimen.

In concluding these notes I must express a hope that some one more learned than myself will corroborate my views as to the colouring of the plumage in the different sexes of *Tkalurania wayleri*. I must also tender my best thanks to Sir Henry Blake, Governor of Jamaica, Mr. Templar, Administrator of Dominica, and Sir Charles Bruce, Governor of the Windward Islands, for their kind permit to collect birds; also to Dr. Nicholls, of Dominica, for the loan of all his books on West-Indian avifauna, which I found most useful during my stay in Dominica.

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XLVI.—*A Visit to Dassen Island, the home of the Jackass Penguin.* By W. L. SCLATER, M.A., F.Z.S., M.B.O.U., Director, South African Museum.

IN Cape Town and its neighbourhood may frequently be seen Malays and other coloured men carrying large green eggs, which they sell to the inhabitants at about two shillings a dozen. These eggs are the product of the Black-footed or Jackass Penguin (*Spheniscus demersus*), the only member of this group of birds found on the South African coast. They are brought to Cape Town chiefly from Dassen Island,